

CLAIMS:

1. An orthopedic bone plate system, comprising:
 - a bone plate for placement adjacent one or more vertebral bodies, having a first aperture extending along a longitudinal axis and an upper and lower surface;
 - a sliding element having a top portion and a base portion, and an aperture extending along a central axis therethrough, said sliding element adapted for being placed adjacent said bone plate aperture;
 - a bone fastener having a longitudinal axis and adapted for connecting said bone plate to a vertebral body, said bone fastener having a stem and a bone engaging portion, wherein a diameter of said stem is less than a cross-section of said sliding element aperture so that said stem may be oriented within said sliding element aperture at a plurality of angles;
 - a stopping element engageable with said sliding element base portion having a bore adapted for receiving said stem portion of said bone fastener; and
 - a locking element engageable with said top portion having a bore adapted for receiving said stem portion of said bone fastener.
2. The orthopedic bone plate system according to claim 1, wherein said sliding element includes a compression member and locking member, said compression member including said top portion, said locking member including said base portion, wherein said compression member is adapted to engage said locking member.

3. The orthopedic bone plate system according to claim 1, wherein a plurality of fingers extend in a direction parallel to said central axis of said component from said top portion toward said base portion.

4. The orthopedic bone plate system according to claim 3, wherein said fingers are tapered inwardly toward said central axis.

5. The orthopedic bone plate system according to claim 1, wherein said top and base portions include an inwardly tapered wall.

6. The orthopedic bone plate system according to claim 1, wherein said top portion includes a radially outwardly extending curved wall.

7. The orthopedic bone plate system according to claim 1, wherein said base portion includes a radially outwardly extending curved wall.

8. The orthopedic bone plate system according to claim 7, wherein said fingers have a ridge extending at least partially around an outer circumference thereof, said ridge adapted to engage a lip extending at least partially around an inner circumference of said base portion.

9. The orthopedic bone plate system according to claim 1, wherein said sliding element aperture has a minimum diameter greater than the maximum diameter of said stem of said bone fastener.

10. The orthopedic bone plate system according to claim 1, wherein said locking element includes a base and a cap.

11. The orthopedic bone plate system according to claim 1, wherein said locking element has a concave wall at least partly surrounding said bore.

12. The orthopedic bone plate system according to claim 11, wherein said locking element includes threads mateable to threads disposed on said stem of said bone fastener.

13. The orthopedic bone plate system according to claim 12, wherein said locking element threadably engages said stem of said bone fastener, wherein said concave surface of said locking element is adapted for cooperating with said sliding element spherical top portion at a plurality of different angles.

14. The orthopedic bone plate system according to claim 1, wherein said stopping element has an inner spherical wall at least partially surrounding said stopping element bore, wherein said stopping element inner spherical wall is adapted for cooperating with a spherical surface of said sliding element base portion at a plurality of different angles.

15. The orthopedic bone plate system according to claim 1, wherein said stopping element has threads mateable to threads on said stem of said bone fastener.

16. The orthopedic bone plate system according to claim 1, wherein said stopping element, said locking element and said bone fastener are adapted for being locked on said sliding element relative to one another, wherein said stopping element, said locking element and said bone fastener may be positioned about said sliding element aperture at a plurality of angles.

17. The orthopedic bone plate system according to claim 1, wherein said bone plate has an interior wall adapted for cooperating with said top and base portion of said sliding element.

18. The orthopedic bone plate system according to claim 1, wherein said top portion and said base portion each include a radially extending shoulder adapted for cooperating with said upper and lower surface of said bone plate.

19. The orthopedic bone plate system according to claim 1, wherein said sliding element is adapted for sliding along said bone plate aperture along the longitudinal axis.

20. The orthopedic bone plate system according to claim 1, including a first set of threads disposed on said stem portion and a second and third set of threads disposed on said stopping element bore and said locking element bore respectively, wherein said first set of threads engage said second and third set of threads when said stem portion is placed within said locking element bore and said stopping element bore.

21. The orthopedic bone plate system according to claim 1, wherein said bone fastener includes a top surface having a recess adapted for engaging an instrument or tool.

22. The orthopedic bone plate system according to claim 21 wherein said recess is capable of being accessed after the bone plate system is assembled.

23. The orthopedic bone plate system according to claim 1, wherein said bone plate has at least two apertures separated by a bridge extending transverse to the longitudinal axis.

24. The orthopedic bone plate system according to claim 1, wherein said bone plate is curved in an anterior and posterior direction.

25. A system for coupling a bone fastener to a bone plate comprising:

a bone plate having a bone facing surface and an elongate opening therethrough extending along a longitudinal axis generally parallel to said bone facing surface;

an insert slidable in said elongate opening, said insert having a first part with a part-spherical outer surface and an internal bore extending along an axis transverse to said elongate opening in said plate;

a bone fastener having a first bone engaging portion and a second portion for extending through said bore in said insert; and

a locking element mounted on said second portion of said fastener, said locking element having a part-spherical surface for engaging said spherical outer surface of said insert, said locking element moveable towards said bone plate along said second portion of said fastener for engaging and moving said insert first part into engagement with said bone plate .

26. The system as set forth in claim 25, wherein said insert further comprises a second part mounted on said fastener and engageable with said bone facing plate surface, said first and second insert parts moveable towards one another for clamping said bone plate therebetween.

27. The system as set forth in claim 26, further comprising a stop element mounted on said fastener second portion and engageable with a bone facing surface of said insert second part.

28. The system as set forth in claim 27, wherein said second portion of said bone fastener is threaded and

said stop element and said locking element include threaded bores for threadably engaging said threads of said fastener second portion.

29. The system as set forth in claim 28, wherein said first and second insert parts each have outer tapered surfaces for engaging tapered surface in said aperture.

30. A method for implanting an orthopedic implant system in a bone comprising:

- a. engaging a bone engaging portion of a bone fastener having a first bone engaging portion and a second portion extending from said bone engaging portion along a longitudinal axis to a bone;

- b. providing a bone plate having a bone facing surface and an elongated opening therethrough extending along a longitudinal axis generally parallel to said bone facing surface;

- c. placing an insert slidable in said elongate opening on said bone fastener, said insert having a first part with a spherical outer surface and an internal bore extending along an axis transverse to said elongate opening in said plate;

- d. positioning said insert down said bone fastener second portion, said insert bore being adapted for receiving said second portion;

- e. orienting said bone plate and said insert into a desired position with respect to said bone fastener; and

- f. mounting a locking element on said second portion of said fastener, said locking element have a spherical surface for engaging said spherical outer surface of said insert, said locking element moveable towards said bone plate along said second portion of said

fastener for engaging and moving said insert first part into engagement with said bone plate.

31. The method according to claim 30, comprising the step of adjusting said bone fastener relative to said bone after said insert receives said second portion.

32. The method according to claim 30, wherein said insert includes a second part having a bore for receiving said bone fastener second portion, said second part engageable with said bone facing plate surface, said first and second insert parts moveable towards one another for clamping said bone plate therebetween.

33. The method according to claim 32, further comprising the step of mounting a stop element on said fastener second portion and engageable with a bone facing surface of said insert second part.